

**REPLACED BY  
ART 34 AMDT**

## Patent Claims

1. A device, particularly an active backscatter transponder, for generating an oscillator signal (s) based on a base signal (sH) with
- 5 - an oscillator (SHFO) for actively constructing the oscillator signal (s) by means of oscillations,
- an input (ANT<sub>s</sub>) for the base signal (sH) and
- an output (ANT<sub>s</sub>) for the oscillator signal (s) generated,
- whereby the oscillator (SHFO) is rendered capable of being
- 10 activated in a quasi-phase-coherent manner with the aid of a control signal (S01, 0/1) and is capable of being activated in a quasi-phase-coherent manner with respect to the base signal (sH) by means of the base signal (sH) for generating the oscillator signal (s),
- c h a r a c t e r i z e d b y
- 15 - a data insertion apparatus (TGEN; SHFO; PhMod) which is adapted for inserting data or a data signal (Dat<sub>TX</sub>) into the oscillator signal (s) during or following its generation.
2. A device as claimed in Claim 1 where
- 20 the data insertion apparatus comprises a clock generator (TGEN) which is adapted for generating the quasi-phase-coherent activation capability of the oscillator, where its clock signal (S01, 0/1) is derived from the data (Dat<sub>TX</sub>).
- 25 3. A device as claimed in Claim 1 where the data insertion apparatus comprises a phase control apparatus (PhMod) which modulates the data (Dat<sub>TX</sub>) onto the oscillator signal (s) by using a switchable phase shift.
- 30 4. A device, particularly a receiver (E) for receiving and processing a received signal (e) which was generated and transmitted by a device as claimed in one of Claims 1 - 3 as a signal (s), with

- a separation apparatus (MIX; TRXMIX) for removing the signal components of the oscillator (SHFO) from the quasi-phase-coherent received signal (e) by using a base signal of a receiver-side oscillator (EHFO; HFO; HFVCO),

5 c h a r a c t e r i z e d b y

- a data recovery apparatus (Demod) for recovering the inserted data (Dat<sub>Tx</sub>).

5. A device as claimed in Claim 4 with

10 a transmission mixer (TRXMIX) which displays

- an input for applying the signal generated by the oscillator (EHFO),

- an output for outputting that signal as a base signal (sH) through the transmission mixer and for transmitting the base signal (sH) to

15 an actual data transmitter station (S; TR),

- an input for applying the received signal (e) and

- an output for outputting the mixed-down received signal (ZFSig; ZFSig'), where particularly the output for outputting the base signal (sH) and the input for the received signal (e) coincide.

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6. A device, particularly a transceiver (TC), as claimed in a preceding claim with

- an oscillator (HFO) for generating an oscillating signal,

- a clock generator (TGEN) for activating the oscillator (HFO),

25 - a mixer (TRXMIX) with an input for applying the oscillating signal of the oscillator (HFO),

- at least one interface (ANT) for transmitting and/or receiving signals (sH, e; s) where the interface is connected to the mixer (TRXMIX),

30 - at least one output of the mixer (TRXMIX) for outputting a signal received by way of the interface (ANT) and mixed down with the oscillating signal (ZFSig),

- a signal and data processing apparatus ( $\mu$ P, TGEN) connected to the mixer (TRXMIX) for optionally

- either applying a received base signal (sH) to the oscillator (HFO) and inserting data or a data signal (Dat) into the oscillating signal (s) for subsequent output by way of the interface (ANT) as the data insertion apparatus (TGEN; SHFO; PhMod)

- or recovering the inserted data ( $\text{Dat}_{\text{TX}}$ ) from a signal (e) received by way of the interface (ANT) and mixed down by way of the mixer (TRXMIX) as the data recovery apparatus (Demod,  $\mu$ P).

7. A demodulator (Demod) for a device as claimed in one of Claims 4 - 6 with

a phase comparator (PHKomp) and a frequency discriminator (DISC) for imposing a frequency-dependent phase shift on the signal, to both of which the received signal (ZFSig') originating from the mixer is fed, where the output signal of the frequency discriminator (DISC) is fed to a further input of the phase comparator (PHKomp), the output of which phase comparator outputs the recovered data (Dat).

8. A demodulator (Demod) for a device as claimed in one of Claims 4 - 6 with

at least one phase-coupled control-loop (PLL) circuit for frequency demodulation.

9. A demodulator (Demod) for a device as claimed in one of Claims 4 - 6 with

at least two different bandpass filter / detector sequences (BP1, G1, TP1 and BP2, G2, TP2), the outputs of which are applied to both an adder (SUM) for outputting a measure for the signal level (SP) and also a differential amplifier (DIFF) followed by a series-connected comparator (SK) for outputting the reconstructed data (Dat).

10. A transponder system with at least one transmitter and at least one receiver (E) in each case as claimed in one of the preceding claims for determining the distance between the transmitter and the receiver (E) by using a base signal (sH) transmitted from the receiver (E) to the transmitter (S; TR) and a signal (s) transmitted back from the transmitter to the receiver (E) which is quasi-phase-coherent with respect to the base signal (sH), where the following is correspondingly provided in the transmitter or the receiver:

- a data insertion apparatus (TGEN; SHFO; PhMod) which is adapted for inserting data or a data signal (Dat<sub>TX</sub>) into the corresponding oscillator signal (s) to be transmitted, and/or
- a data recovery apparatus (Demod) for recovering data (Dat<sub>TX</sub>) inserted into received signals.

11. A receiver as claimed in Claim 10 with

- a demodulator (Demod) for recovering original data (Dat),
- a measuring apparatus (Meas) for determining the distance between the transmitter and the receiver,
- an oscillator, which comprises a variable oscillator (HFVCO) with regard to frequency, with which frequency-modulated signals suitable for measuring distance are capable of being generated and
- a receiver mixer (TRXMIX) which is designed for mixing received signals (e) with signals of the oscillator (HFVCO) and which displays an output for outputting signals (ZFSig) resulting therefrom, where the output is connected to the demodulator (Demod) and the measuring apparatus (Meas).

12. A method for transmitting data, particularly with a device as claimed in a foregoing claim, where

- an oscillator signal (s) based on a base signal (sH) is generated,
- an oscillator (SHFO) is activated in a quasi-phase-coherent manner with respect to the base signal (sH) by means of the base signal (sH),

- the oscillator (SHFO) oscillates to the activation and the oscillator (SHFO) actively generates an oscillator signal (s) to be transmitted by means of the oscillation,
  - where data or a data signal (Dat<sub>TX</sub>) is inserted in the quasi-phase-coherent oscillator signal to be transmitted during or following its generation.
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